Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the matter of	)	
	)	
Amendment of Parts 21 and 74 of the Commission's Rules With Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service	)	MM Docket No. 94-131
	)	
and	)	
	)	
Implementation of Section 309(j) of the Communications Act-Competitive Bidding	)	PP Docket No. 93-253

DOCKET FILE COPY ORIGINAL

COMMENTS

HARDIN AND ASSOCIATES, INC.

George W. Harter, III
T. Lauriston Hardin, P.E.
Ronald J. Meyers
John W. Beck
William R. Warren
James C. Cornelius

5750 Chesapeake Blvd.
Suite 203
Norfolk, VA 23513-5325
(804) 853-3238

I. INTRODUCTION

Hardin and Associates, Inc. ("Hardin"), a professional engineering firm licensed in the Commonwealth of Virginia and specializing in the licensing, design and construction of the Wireless cable and ITFS systems, hereby submits the following comments in reply to the Commissions' Notice of Proposed Rulemaking, MM Docket No. 94-131 released December 1, 1994 ("NPRM").

Hardin is supportive of the Commission's desire to streamline the procedures by which Multipoint Distribution Service (MDS) applications are filed and processed. The current system results in the time frame for channel licensing being measured in years rather than months or weeks as the case should be. Obviously, the system must be improved.

However, even though the desire is to make the MDS application process more expedient, there should be an equal desire to insure the application and licensing process results in granted stations which can coexist with surrounding stations in an environment free of interference. An application process devoid of interference considerations in any of its phases is certain to lead to situations where markets cannot be engineered to resolve the interference conflicts. These types of situations will not result in a more expedient system but, in fact, will result in the same or greater time delays we see today just moved to another point in the

application process. Hardin is against any process which does not consider the interference implications on existing and proposed stations in all aspects of the application process.

A good example of the problems this type of policy can create is the Commission's past policy of accepting applications, even if technically incomplete, to participate in lotteries organized by MSA. Applications were thrown together, submitted and accepted even though critical elements may have been omitted. Also, certain MSA's are physically close and result in interference situations difficult, if not impossible, to resolve. Therefore, the highest quality and performance possible can not ultimately be delivered to the consumer, and thus, the public interest is not served.

No matter what policy is adopted by the Commission, Hardin believes the policy should

1) fully consider existing MDS and ITFS stations and avoid creating increased interference situations beyond what already exist, and
2) require technically complete applications from the beginning of the process, and
3) result in an expedient application and licensing process.

In order to achieve these goals, the Commission must keep in mind the propagation characteristics of the MDS signal and their requirements on the application process. Too often, insufficient consideration to how a service actually works and too much

consideration on expediency can create unworkable situations. A typical MDS transmission system can radiate a signal 35 - 40 miles radius around its transmit site. Under certain conditions, a signal can reach significantly father when antenna height and terrain characteristics are cooperative. The Commission's recent requirement that radio shadow maps be provided for cochannel stations within 100 miles certainly recognizes the ability of an MDS signal to reach significant distances.

Therefore, the MDS technology cannot be considered cellular. Application procedures applicable to cellular systems may not be directly applicable to MDS. Also, MDS signals utilize emissions consisting of vestigial sideband AM signals and not FM signals as in cellular. These signals behave very differently in the presence of interference and noise.

The MDS signal is more closely related to the VHF, UHF and LPTV broadcast services. The same types of equipment, emissions, interference conditions and radiation patterns are created in MDS as in these broadcast services, especially LPTV. Therefore it would seem logical that the MDS application process would at least be similar to the efficient and expedient application process currently implemented by the LPTV service.

II. DISCUSSION

MSA/RSA/ADI Approach

The Commission favors the dissemination of MDS licenses by an MSA/RSA/ADI approach because it believes this filing approach will

1) provide the framework for the most manageable and efficient system to disseminate MDS licenses, and
2) reduce administration burdens prior to the auction on both applicants and the Commission and reduce delays by utilizing a short form application, and
3) encourage universal coverage and promote development of MDS as a viable competitive service, and
4) deter speculative filings because the auction methodologies are designed to ensure that the party who highly values the spectrum obtains a license.

Hardin agrees this approach would result in the most manageable and efficient system to disseminate licenses for the Commission but not necessarily for the new or existing operator. Without properly considering interference issues to existing cochannel and adjacent channel stations, one cannot determine whether a market is viable. If a market is first determined to be available by some arbitrary definition of a geographic area rather than a hard interference definition, the chances of creating a workable market are low. Operators could be deceived into bidding on a what appears to be a potentially profitable market area, only to find out after the bidding process the area will receive so much interference from existing stations that the market is worthless. This type of

system does not promote universal coverage but gives a false impression of universal coverage with unacceptable performance.

Hardin has no idea how to apply the existing interference standards to a system based on this type of approach. An MSA, RSA or ADI will not guarantee sufficient separation between markets to allow interference free operation. However, these interference standards must be adhered to and possible reinforced. A typical MDS station can provide service well beyond the currently defined protected service area (PSA) of 15 miles radius or 706.8 square miles. Therefore, any system adopted by the Commission should protect the existing PSA and even consider expanding to a larger interference free area.

Hardin fails to see how the acceptance of a short form application with no technical information regarding system performance serves to deter speculative filings. It would seem possible that because of the simplicity of the application, anyone wishing to enter the bidding process with the hopes of being "bought out" by legitimate bidders could do so. Or, speculative bidders could be lured into bidding on what appears to be a legitimate market, causing the price for the market to sky rocket and only to find later that because of interference considerations to other stations the market is worthless.

Hardin does not believe this approach would benefit the Wireless cable industry or promote MDS as a competitive service.

E, F and H Identified Sites

This approach, forwarded in the NPRM, appears to be more considerate of interference issues than the MSA/RSA/ADI approach but with certain complications. Not all E, F or H channels within a market are collocated. Therefore, which site is to be selected for the application process? Also, what characteristics would determine which sites were optimum? This type of approach does not leave the operator the flexibility to design a market to serve the market area as they see fit. Hardin does not believe this type of process would be easy for the Commission to implement or facilitate flexible system design.

National Filing Window

This approach is favored by Hardin because the arbitrary geographic restrictions placed on MDS systems by the previous two approaches do not exist. This type of system is currently in use by the LPTV service and is efficient and expedient in dealing with applications.

Since applicants must perform the detailed engineering analysis prior to submitting an application for the bidding process, this will insure the Commission's interference protection standards are adhered to. Also, because applications could only be filed in areas where the interference standards can be met, this may reduce the overall number of applications filed throughout the

country. Similarly, because the applicants must go to the time and expense of having a market engineered prior to submitting an application, the process should generate applicants genuinely interested in building a Wireless cable business and help to reduce the number of speculative applications.

Hardin appreciates the fact that this type of process would place increased demands on Commission staff to review long form type applications prior to the competitive bidding process. However, possibly the review prior to the bidding could be less exhaustive than currently exists. For example, suppose the Commission required interference evaluations be performed utilizing the current 0 and 45 dB standards for adjacent and cochannel interference and any exceptions to this standard require a wavier. If terrain blockage or offset is utilized to protect surrounding stations then a wavier request is submitted along with the application. The staff could review applications for complete answers on all parts of the form, the correct number of interference evaluations and the correct number of waivers. The detailed review of the interference analyses could be performed after the bidding process.

Also, if the Commission took a tough stance and allowed only certain minor modifications to applications after the bidding process, this would discourage speculative applications and incomplete technical analyses. This should help to reduce the amount of time the Commission's staff spends reviewing technically

flawed applications. However, if the Commission does toughen its stance and require technically complete applications the Commission must provide access to the database of existing and proposed MDS and ITFS facilities. A majority of the errors made by engineering firms is the failure to identify all of the stations requiring interference protection. Commercially available databases and the Commission's own paper copy databases provide insufficient data to allow engineers to do a thorough and complete job of analyzing stations.

Upon lifting of the freeze, Hardin does support limiting the first filing window to existing operators trying to accumulate a "critical mass" of channels within a market. This window should be limited to operators with licenses or leases of at least 4 channels in a market.

Hardin would also recommend the following procedures be implemented to increase the efficiency and speed of the MDS application process:

1) Promptly dismiss H channel stations licensed during the time when these stations were considered OFS but have not been constructed for years.
2) Limit the number of extensions an MDS station can obtain without construction.
3) Eliminate the current system of extending a 90 day period of time from public notice to ITFS operations for filing petitions to deny. The 30 day public notice period

should be sufficient since ITFS operations should monitor public notices of adjacent or cochannel ITFS applications and modifications on a 30 day cut-off period.

4) Standardize the methodology used to prove terrain blockage and eliminate interference. The use of a radio shadow map constructed from 3 second terrain data and containing pertinent station's PSA and 45 or 0 dB contours is the most efficient and expeditious method. By looking at a properly constructed radio shadow map, an engineer can easily ascertain if the proper protection has been afforded to surrounding stations.

5) Adopt a rule allowing involuntary utilization of precise control and offset to reduce the cochannel interference criterion if an applicant agrees to bear the cost of upgrading all transmission equipment. This policy would be similar to the upgrading of receive antennas at ITFS receive sites currently. Hardin would recommend the Commission allow the reduction in cochannel interference from 45 to 35 dB if transmitter control is held to +/- 3 Hz and offsets are 10,010 Hz.

6) Provide access to the Commission's database of ITFS and MDS stations licensed or proposed. This will allow engineers to determine and analyze all of the appropriate stations <u>prior</u> to the applications reaching the Commission.

Interference Criteria and Mutual Exclusivity

Hardin agrees with the Commission's use of the formula listed in the rulemaking to define the interference level experienced at a receive site. However, the Commission's comments fail to address two interference protection issues critical to the creation of successful MDS markets. The first is a mutually agreed to reduction in cochannel interference levels below the 45 dB criterion based on the use of frequency control and offset. This is an accepted methodology for allowing MDS stations and ITFS stations to coexist in relatively close proximity. This flexibility must remain in order to achieve the maximum coverage possible by the MDS service.

The second issue not considered by the Commission is the use of terrain blockage to protect stations which would otherwise receive interference below the Commission's criteria. Terrain blockage and earth curvature is a very valid technical methodology for protecting stations. Whatever system is implemented by the Commission should not omit the ability to utilize terrain blockage in the prevention of interference.

Hardin agrees with the Commission's desire to eliminate certain data from the Form 494 which no longer yields useful information. Also, Hardin supports the Commission's effort to specify the transmission system output in EIRP rather than worry about the transmitter output. This allows the operator the

flexibility of utilizing long runs of waveguide and overcoming the losses with increased transmitter power if financially reasonable.

III. CONCLUSION

Hardin is very supportive of the Commission's efforts to streamline the procedures by which MDS applications are filed and processed. Hardin believes the most efficient and ultimately the most expedient methodology for achieving this goal is to implement a national filing window process. This type of process will insure the interference standards necessary to create viable MDS markets are included in every step of the process and are at the heart of the Commission's concerns.

Respectfully Submitted,

George W. Harter, III

George W. Harter, III
Vice President
Hardin and Associates, Inc.

Consulting Engineers:

T. Lauriston Hardin, P.E.
Ron J. Myers
John W. Beck
William R. Warren
James C. Cornelius